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Service scenarios over FMC

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Service scenarios over FMC

Summary

One of the essential benefits of the NGN is a supporting of convergences such as a fixed mobile convergence (called FMC), telecom-broadcasting converged service like IPTV. ITU-T produced several Recommendations on FMC and IPTV, especially in the ITU-T Y.2000 series of Recommendations. ITU-T is developing more detailed aspects of supporting the FMC, taking consideration of the fact that various services are waiting to utilize the FMC as their service infrastructure, which will extend their service coverage as well as give more benefits to the user.

This Supplement to the ITU-T Y.2000-series Recommendations on the scope of service scenarios over the FMC provides service scenarios which are used over FMC. This Supplement uses the features of involved key elements of FMC to guide how services can be provided in detail. This Supplement also introduces overall configurations and scenario models to identify service scenarios over the FMC.

Keywords

Advertisement, FMC, IPTV, NGN

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1. Scope

This Supplement provides service scenarios over the FMC. These service scenarios are described using features of key elements of the FMC.

This Supplement covers the following:

- Features of key elements for FMC
- Overall FMC configuration model and scenario model
- Scenarios over the FMC such as a digital advertisement service, a targeted advertisement service, and an IPTV service.

2. References

The following ITU-T Recommendations and other references contain provisions, which through reference in this text; constitute the provisions of this Supplement. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Supplement are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

[ITU-T Q.1702] ITU-T Recommendation Y.1702 (2002), Long-term vision of network aspects for systems beyond IMT-2000

[ITU-T Q.1706/Y.2801] ITU-T Recommendation Q.1706/Y.2801(2006), Mobility management requirements for NGN

[ITU-T Q.1762/Y.2802] ITU-T Recommendation Q.1706/Y.2802(2006), Fixed-mobile convergence general requirements

[ITU-T Y.1910] ITU-T Recommendation Y.1910 (2008), IPTV functional architecture

[ITU-T Y.2001] ITU-T Recommendation Y.2001 (2004), General overview of NGN.

[ITU-T Y.2011] ITU-T Recommendation Y.2011 (2004), General principles and general reference model for Next Generation Networks

[ITU-T Y.2012] ITU-T Recommendation Y.2012 (2006), Functional requirements and architecture of the NGN.

[ITU-T Y.2091] ITU-T Recommendation Y.2091 (2008), Terms and definitions for Next Generation Networks

[ITU-T Y.Sup5] ITU-T Y-series Recommendations – Supplement on IPTV service use cases

3. Definitions

3.1 Terms defined elsewhere:

This Supplement uses the following terms defined elsewhere:

3.1.1 Fixed Mobile Convergence [Y.2802]:

In a given network configuration, the capabilities that provide services and application to the end user defined in [ITU-T Y.2091] regardless of the fixed or mobile access technologies being used and independent of the user's location. In the NGN environment [ITU-T Y.2011], it means to provide NGN services to end users regardless of the fixed or mobile access technologies being used.

3.1.2 Service [ITU-T FG IPTV Y.1910]:

Service is defined as a set of functionalities enabled by a provider for end users; for example, providing IP connectivity with managed quality of service, providing an IPTV Service, providing content for demanded services, etc.

3.1.3 Converged Service [ITU-T Q.1702]:

The integration of the Internet, multimedia, e-mail, presence, instant messaging, m-commerce, etc., services with voice service.

3.1.4 Quality of Service [ITU-T Q.2091]:

- Absolute QoS [ITU-T Y.2111]: Traffic delivery with numerical bounds on some or all of the QoS parameters. These bounds may be physical limits, or enforced limits such as those encountered through mechanisms like rate policing. The bounds may result from designating a class of network performance objectives for packet transfer.

- Relative QoS [ITU-T Y.2111]: Traffic delivery where bounds on QoS parameters such as delay, etc., are not expressed in absolute terms. It describes the circumstances where certain classes of traffic are handled differently from other classes of traffic, and the classes achieve different levels of QoS.

3.2 Terms Defined in this Supplement

This Supplement defines the following terms:

3.2.1 Content Mediation:

A set of functions that change content metadata and content quality based on content information such as video encoding, audio encoding, resolution, etc.

3.2.2 Different Capability:

For terminal, it is a change of computing resources such as decoding codec, screen size, or terminal's network interface.

For network, it is a change of access network type and network performance parameters such as bandwidth and traffic management process.

3.2.3 Different Quality:

A change of trans-coding QoS parameters, such as encoding codec, resolution (CIF, SD, HD) or frame rate

3.2.4 Digital Advertisement:

This service is commonly used to display advertisement of a store at fixed location or mobile terminals. For a fixed location, it normally uses a big screen TV combined with networked computer to display advertisement. It plays advertisement contents on a designated schedule coordinated by the shop manager. For mobile terminals, when a customer approaches the coverage of a store's POAs (Point of Access), the prepared advertisements are supplied to the connected customer.

3.2.5 Targeted Advertising Service:

A type of advertising service in which advertisements are prepared and sent to users based on various profiles such as user, device and content. Examples of user profiles are age, gender, preference, purchase history, or observed behaviour. Examples of device profiles are screen size, access network type, or computing resource. Examples of content profiles are genre, directors, actors, format, or language.

3.2.6 Prosumer:

A prosumer is a blend of two words formed by contracting either the word professional or producer with the word consumer. The prosumer comes from a prediction that the role of producers and consumers would begin to blur and merge.

3.2.7 Service Platform:

A service platform provides an open environment in NGN. Key features of the open environment include service creation, service execution, service provision, service management, resource management, content management, and data management.

4. Abbreviations and acronyms

This Supplement uses the following abbreviations and acronyms

AAA	Authentication, Authorization, Accounting
ACK	Acknowledgement
AP	Access Point
CDF	Content Delivery Function
CDN	Content Delivery Network
CIF	Common Intermediate Format
EPG	Electronic Program Guide
FMC	Fixed Mobile Convergence
HD	High Definition
IPTV	Internet Protocol TV
NGN	Next Generation Network
POA	Point of Access
QoE	Quality of Experience
QoS	Quality of Service
SD	Standard Definition
SLA	Service Level Agreement
SMS	Simple Message Service
STB	Set-Top-Box
VoD	Video on Demand
Wi-Fi	Wireless-Fidelity
WLAN	Wireless Local Area Network
WiMAX	Worldwide Interoperability for Microwave Access

5 Conventions

None

6. Key Elements for FMC

There are five key elements to define: Person, Terminal, Network, Contents and Service.

- **Person (End User):** This is a key subject for consuming services over FMC. It is characterized by the location, that is, “Same Location” or “Change Location”
- **Terminal:** This is a key device supporting services for the person. The person can own multiple terminal devices either fixed, mobile or Wireless. The terminal can be classified into two categories (Single mode and Multi mode) by the number of network connection interfaces. As single mode terminal provides a single connection to the network that is either fixed or mobile or wireless. A multi-mode terminal provides several ways of connection to the networks. In this supplement, we use a dual mode terminal as an example of a multi mode terminal. The dual mode terminal provides dual connections to the network that are either fixed, mobile or wireless.
- **Networks:** This is a key part supporting mobility and FMC of the terminal. The network is composed of an access network and a core network. We can classify the access network by its technology basis, whether it is “Fixed”, “Mobile” or “Wireless”.
- **Contents:** This is a key part that is presented by media files and media processing. The contents form services for the end user.
- **Service:** This is a key part for the end users providing a set of functionalities enabled by a service provider.

7. Features of key elements

7.1 Behavioural aspect of Person

A person will use terminal device either keeping the same location or changing location. Changing the location causes supporting of mobility if the person wishes to keep current services. So we can determine the features of the person’s key element by the location, whether it is, “Same location” or “Change location”.

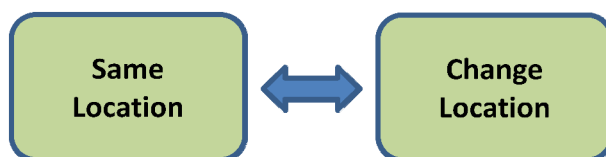


Figure 1. Features of Person

7.2 Capability aspect of Terminal

The terminal is operated following the behaviour of the person while trying to keep the service continuity. As a result of following person’s behaviour, it is decided whether the capability of the terminal should be changed or not.

For example, figure 2 shows three cases of the terminal capability change or no-change according to the behaviour of the person.

First case shows the situation of the person watching high quality IPTV at home. He has to go to his company and he wants to watch the program seamlessly using his mobile phone. In this case the capability of the terminal is changed: from single mode, fixed network TV to dual mode, wireless network mobile phone.

Second case shows the situation of the person moving his location from A (home, wireless network area) to B (company, mobile network area), while continuing the service. In this case the capability

of the terminal is changed: network mode change of mobile phone from wireless network to mobile network.

Third case shows the situation of the person moving his location from B (company, mobile network area) to C (university, mobile network area), while continuing the service. In this case, there is no terminal capability change because it is merely a change of mobile base station.

Figure 2. Example cases of Person's behaviour of terminal usage

Therefore we can determine the features of the terminal key element by the capability, whether it is, the "Same capability" or "Different capability".

Figure 3. Features of Terminal

7.3 Capability aspect of Network

The features of access network needs to be considered by the technology basis: Fixed, Mobile and Wireless. For those networks, the network capability may vary from one network to another. For example, a fixed broadband network is able to support much higher bandwidth than cellular wireless.

Core network is a delivery part managing overall traffic transferring process such as re-routing, traffic congestion and failure in the routing path etc. The core network's capability should be impacted by end user behaviour such as changing access networks. Therefore, core network features can be determined by "Same Capability" and "Different Capability".